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Reply to: 3400 July 14, 1986

Subject: Beech Bark Disease on the Monongahela National Forest

ORIGINAL

To: Jim Page, Supervisor Monongahela National Forest

SUMMARY

Beech scale populations on the Forest have remained stable over the past three years. Beech mortality has increased along with signs of Nectria infection. Overall condition of living beech within the infested area has declined.

INTRODUCTION

Following the discovery and subsequent survey of beech bark disease (BBD) on the Monongahela National Forest (Mielke et al. 1982, Mielke et al. 1984) FPM and NEFES established four permanent plots on the Greenbrier Ranger District to monitor any change in the status of BBD and tree condition. Observations were made in 1983, '84 and '85 in three pole and sawtimber size stands, and in '83 and '84 in a stand consisting primarily of root sprouts of sapling size. These plots are part of an Eastwide network within BBD affected areas. In addition, a stand in the Gaudineer Scenic Area with individual trees that are apparently resistant to the beech scale is being monitored and sampled. This report covers 3 years of information on these plots.

METHODS

The overstory plots are located on Cheat Mt. (plot 20), Burner Mt. (plot 21), and Middle Mt. (plot 22). The regeneration plot is also on Burner Mt. (plot 23). Each overstory plot was in a slightly different stage of disease development at the time of establishment; respectively, the killing front, and early and late stages of the advancing front (Houston and O'Brien 1983). Plot 23 was also in part of the advancing front. In 1986, all plots are now part of the killing front.

The BBD status data reported here include wax (the number of trees with beech scale), tar spots (the number of trees with the initial stages of fungus infection), and Nectria fruiting (the number of trees positively infected and likely to die soon). Tree condition information is reported in four classes, good (foliage green, <10% dead crown branches), fair (foliage green to yellow, 10-50% dead crown branches), poor (foliage green to yellow, >50% dead crown branches) and dead (no live foliage).

RESULTS

Scale populations were relatively unchanged in all of the plots. The actual number of trees infested by the scale actually declined somewhat, but this was due to the increased levels of tree mortality and resultant scale mortality. The number of trees showing tar spots and Nectria fruiting bodies increased in all overstory plots. All disease indicators were relatively unchanged in the regeneration plot.

Tree condition reflected the increase in the number of trees with tar spots and Nectria. There were many fewer good trees and an increase in fair, poor and dead trees in all overstory plots. There were no marked differences in the regeneration plot. These data are presented with the accompanying graphs. Tree condition information from plot 23 had some discrepancies and is therefore not presented.

DISCUSSION

These trends will undoubtedly continue. The passage of the killing front through New England resulted in mortality of 85% of overstory beech and widespread development of the aftermath forest. The presence of trees apparently resistant to the scale is encouraging and is a phenomenon which can be exploited to enhance the resistant character of beech stands on the Forest.

Included are copies of the literature cited and a copy of a paper on beech bark disease management alternatives. In addition, our office is preparing an updated report on the extent of beech decline and mortality on Cheat, Shavers and Middle Mountains using 1:8000 color IR aerial photos. This should be available by the end of September. If you have any questions or want any additional information please contact our office.

LITERATURE CITED

Houston, David R.; O'Brien, James T. Beech bark disease. Forest Insect and Disease Leaflet 75. Washington, DC: U.S. Department of Agriculture; 1983. 8p.

Mielke, Manfred E.; Haynes, Clark; MacDonald, William L. Beech scale and Nectria galligena on beech in the Monongahela National Forest. Plant Disease 66: 851-852; 1982.

Mielke, Manfred E.; Ciesla, William M.; Myhre, Richard J. Inventory of beech bark disease mortality and decline on the Monongahela National Forest, West Virginia. Report 84-4. Fort Collins, CO. U.S. Department of Agriculture, Forest Service, Methods Application Group; 1984. 15p.

Sincerely,

Manfred E. Mielke
Plant Pathologist
Forest Pest Management

Enclosure

cc: Cheat Ranger District
Gauley Ranger District
Greenbrier Ranger District
Marlinton Ranger District
Potomac Ranger District
White Sulphur Springs Ranger District